

## **Appendix F**

**Ronald M. Latanision, Ph.D.**

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**Principal and Practice Director**

**Professional Profile**

Dr. Ronald M. Latanision is a Principal and Director of Exponent's Mechanics and Materials practice. Prior to joining Exponent, he was the Director of The H.H. Uhlig Corrosion Laboratory in the Department of Materials Science and Engineering at M.I.T., and held joint faculty appointments in the Department of Materials Science and Engineering and in the Department of Nuclear Engineering. He is now an Emeritus Professor at MIT. In addition, he is a member of the National Academy of Engineering and a Fellow of ASM International, NACE International, and the American Academy of Arts and Sciences. From 1983–1988, Dr. Latanision was the first holder of the Shell Distinguished Chair in Materials Science. He was a founder of Altran Materials Engineering Corporation, established in 1992, and led the Materials Processing Center at MIT as its Director from 1985 to 1991.

Dr. Latanision's research interests are focused largely in the areas of materials processing and in the corrosion of metals and other materials in aqueous (ambient as well as high temperature and pressure) environments. He specializes in corrosion science and engineering with particular emphasis on materials selection for contemporary and advanced engineering systems and in failure analysis. His expertise extends to electrochemical systems and processing technologies, ranging from fuel cells and batteries to supercritical water power generation and waste destruction. Dr. Latanision's research interests include stress corrosion cracking and hydrogen embrittlement of metals and alloys, water and ionic permeation through thin polymer films, photoelectrochemistry, and the study of aging phenomena/life prediction in engineering materials and systems. He speaks annually at MIT's Reactor Technology Conference for Utility Executives. Dr. Latanision is a member of the International Corrosion Council and serves as Co-Editor-in-Chief of *Corrosion Reviews*.

Dr. Latanision has served as a science advisor to the U.S. House of Representatives Committee on Science and Technology in Washington, D.C. He has also served as a member of the Advisory Committee to the Massachusetts Office of Science and Technology, an executive branch office created to strengthen the Commonwealth's science and technology infrastructure with emphasis directed toward future economic growth. Dr. Latanision has served as a member of the National Materials Advisory Board of the National Research Council and now serves as a member of the NRC's Committee on Undergraduate Science Education. He hosts the annual Siemens Westinghouse Science and Technology Competition on the MIT campus. In June of 2002, Dr. Latanision was appointed by President George W. Bush to membership on the U.S. Nuclear Waste Technical Review Board.

**Credentials and Professional Honors**

Ph.D., Metallurgical Engineering, Ohio State University, 1968  
B.S., Metallurgy, Pennsylvania State University, 1964

2004 Henry B. Linford Award, Electrochemical Society; 2004 Best Paper of the Year in “Metals and Materials International”, Korean Institute for Metals and Machinery; 2001 T.P. Hoar Award, British Institute of Corrosion; Fellow, American Academy of Arts and Sciences (1997); Centennial Fellow, College of Earth and Mineral Sciences, Pennsylvania State University (1996); NACE Fellow Award, NACE International (1995); Willis Rodney Whitney Award, NACE International (1994); Honorary Alumnus, Association of Alumni/Alumnae of MIT (1992); Distinguished Alumnus, The Ohio State University (1991); Visiting Professor, University of Naples, Italy (1989–); President, Alpha Sigma Mu (1989); Fellow, ASM International (1988); David Ford McFarland Award, The Pennsylvania State University (1986); Member—National Academy of Engineering (1985); Henry Krumb Lecturer, AIME (1984); Shell Distinguished Professor of Materials Science (1983–1988); Case-Western Reserve Centennial Scholar (1980); Senior U.S. Scientist Award for Research and Teaching, the Alexander von Humboldt Foundation; Federal Republic of Germany (1974), Tenure (June 1974–June 1975); A.B. Campbell Young Author’s Award for 1972, National Association of Corrosion Engineers; National Academy of Sciences–National Research Council Postdoctoral Fellowship Award; National Bureau of Standards (1968–1969); N.A.S.A. Traineeship, Ohio State University (1964–1968); Bayard D. Kunkle Award, Pennsylvania State University (1963–1964); Alcoa Foundation Scholarship, Pennsylvania State University (1962–1964); American Society for Metals Foundation for Education Scholarship, Pennsylvania State University (1961–1962); Mineral Industries Scholarship, Pennsylvania State University (1960–1961); Election to various Honorary Fraternities including Phi Eta Sigma, Tau Beta Pi, Sigma Tau, Phi Kappa Phi, Sigma Gamma Epsilon, Alpha Sigma Mu.

## **Publications**

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### **Presentations and Published Abstracts**

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“How Can Schools of Science, Math and Education Work Together to Prepare Teachers for the Next Century,” Massachusetts Department of Education, Marlboro, MA, April 18, 1997.

“Corrosion of Nickel Base Alloys in Supercritical Water Oxidation Systems,” Corrosion '97 (Task Group T-5A-40), New Orleans, LA, March 12, 1997.

“An Assessment of Corrosion and Failure Mechanisms in Supercritical Water Oxidation Systems,” 13th International Corrosion Congress, Melbourne, Australia, November 27, 1996.

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“Corrosion of Materials in Supercritical Water Oxidation Systems for Waste Destruction,” Japan Corrosion Society, Hiroshima, Japan, November 19, 1996.

“Corrosion Related Issues in Device Packaging,” Department of Materials Science and Engineering, Kyushu Institute of Technology, Kitakyushu City, Japan, November 14, 1996.

“Photoelectrochemistry of Passive Films,” Institute of Materials Research, Tohoku University, Sendai, Japan, November 13, 1996.

“Corrosion of Materials in Supercritical Water Oxidation Systems for Chemical Waste Destruction,” Conference on Energy and The Environment, Institute for Materials Research, Tohoku University, Sendai, Japan, November 11, 1996.

“Corrosion Issues and Materials Selection in Supercritical Water Oxidation Systems,” Toshiba Heavy Apparatus Engineering Laboratory, Yokohama, Japan, November 7, 1996.

“Corrosion of Materials in Supercritical Water Oxidation Systems for Chemical Waste Destruction,” Tokyo Institute of Technology, November 6, 1996.

“Corrosion of Materials in Supercritical Water Oxidation Systems,” JGC Corporation Oarai Nuclear Research Center, Mito, Japan, November 5, 1996.

“Photoelectrochemical Characterization of Surfaces,” JIM/TMS Joint Meeting, Honolulu, HI December 14, 1995.

“New England Science Teachers,” Woburn Public Schools Awards Ceremony, Woburn, MA, June 12, 1995.

“Keynote Address,” Cape Cod Academic All Star Award Banquet, Hyannis, MA, June 8, 1995.

“Science Literacy in America,” NSTA National Convention, Philadelphia, PA, March 25, 1995.

“A Photoelectrochemical Investigation of the Effect of Alloying Additions on the Electronic Properties of Passive Titanium,” TMS Symposium on Localized Dissolution and Corrosion, Rosemont, IL, October 6, 1994 (by G. Berera).

“K–12 Education Reform: Public Will vs. Political Will,” Plenary Lecture, MIT Parents’ Weekend, October 15, 1994.

“MIT’s Programs in K–12 Education,” Massachusetts Board of Library Commissioners, Boston, MA, July 29, 1994.

“Corrosion Science, Corrosion Engineering and Advanced Technologies,” Industrial Technology Research Institute, Materials Research Laboratories, Chutung, Hsinchu, Taiwan, July 11, 1994.

“Current Research Activities in Corrosion and Corrosion Resistant Materials,” Taipower Company Seminar, Taipei, Taiwan July 9, 1994.

“Current Research in New Corrosion Resistant Materials” Korean Electric Power Corporation Research Center, Taejeon, Korea, July 7, 1994.

“Corrosion Resistance of Rapidly Solidified Nd-Fe-B Permanent Magnets,” U.S.–Japan Symposium on Development and Environmental Characteristics of New Materials, Mt. Hood, OR, June 7, 1994.

“K–12 Education Reform: Political Will vs. Public Will,” MIT Club of Southeastern Massachusetts, New Bedford, MA, April 24, 1994.

“The Chemical Properties of Advanced Materials,” Joint NACE/ASM Meeting, Baltimore/Washington Sections, Baltimore, MD, April 5, 1994.

“Education Reform: Public Will vs. Political Will,” Friends of the Snow Library, Orleans, MA, March 27, 1994.

“Corrosion Science, Corrosion Engineering and Advanced Technologies,” Willis R. Whitney Award Lecture, NACE International Corrosion 94, Baltimore, MD, March 1, 1994.

“Advances in Corrosion Science and Engineering,” Plenary Lecture, 6th Middle East Corrosion Conference, Bahrain, January 24, 1994.

“Your Child: Educated for Tomorrow?” Community Education Alliance, South Shore Lecture Series, Norwell, MA, November 9, 1993.

“K–12 Educational Reform: Political Will vs. Public Will,” Sigma Xi Dinner Meeting, GTE Laboratories, November 3, 1993.

“Educational System Reform,” MIT Club of New York, Princeton Club, October 19, 1993.

“Corrosion of Materials of Construction in Supercritical Water Oxidation Systems,” ARO/URI Project Review Meeting, University of Delaware, August 17, 1993.

“Programming Schools for the Year 2000: A Systems Approach,” Designing New American Schools, MIT Department of Architecture Symposium, April 24, 1993.

“Corrosion Engineering,” Peoria Chapter of ASM, Peoria, IL, April 21, 1993.

“MIT Programs in K–12 Education,” MIT Club of South Texas, Houston, TX, April 19, 1993.

“A Call to Arms for American K–12 Education,” Engineering Council of Houston, Houston, TX, April 20, 1993.

“Crisis in American K–12 Education: What Can be Done About It?” MIT Club of New Haven, February 16 1993.

“Restructing Teacher Education—Will It Make a Difference,” Keynote Address, Project CONNSTRUCT, Connecticut Academy for Science, Cromwell, CT, January 22, 1993.

“MIT’s Initiative in K–12 Education,” ASM Fellows Night, Cambridge, MA, December 5, 1992.

“MIT and K–12 Education,” MIT Alumni Club of Northeast Ohio, Cleveland, OH, November 18, 1992.

“American K–12 Education: The Role of the Research Universities,” NTU Materials Science Program, North Carolina State University, Raleigh, NC, November 11, 1992.

“MIT and K–12 Education,” MIT Club of Boston, MA, November 4, 1992.

“MIT and K–12 Education,” MIT Club of Portland, ME, October 27, 1992.

“The State of American K–12 Education,” Gordon Conference on Corrosion Banquet Address, July 23, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” Cape Ann Chamber of Commerce, Cape Ann, MA, June 11, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” Banquet Address, Tri-Services Conference on Corrosion, Plymouth, MA, May 13, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” MIT Club of Southeast Michigan, Ann Arbor, MI, May 12, 1992.

“World Class Education,” Business-Education Partnership, York College, York, PA, May 8, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” MIT Club of Cape Cod, Hyannis, MA, May 7, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” Raytheon Engineering Seminar, Lexington, MA, May 6, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” Banquet Address, 1st Annual TPAM Workshop, Williamsburg, VA, April 22, 1992.

“Crisis in American K–12 Education: What Can Be Done About It,” MIT Club of Virginia, Charlottesville, VA, April 21, 1992.

“Corrosion Engineering of Advanced Materials and Advanced Engineering Systems,” University of Virginia, Materials Science Seminar, April 21, 1992.

“Crisis in American K–12 Education: What Can Be Done About It,” Rotary Club of Woburn, Woburn, MA, April 14, 1992.

“MIT and The New England Science Teachers,” National Science Teachers Association Annual Conference, Boston, MA, March 27, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” Massachusetts Academy for Teachers, University of Massachusetts, Boston, MA, March 21, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” AMLT Seminar, Watertown, MA, March 16, 1992.

“Crisis in American K–12 Education: What Can Be Done About It?” MIT Alumni Club of Minneapolis, MN, February 20, 1992.

“Engineers and Public Service,” Tau Beta Pi Initiation Banquet, Boston, MA, February 9, 1992.

“U.S. Science and Engineering Education: New Rationales for New Initiatives,” 7th Annual Conference of the National Association for Science Technology and Society, Alexandria, VA, February 8, 1992.

Education Equity Roundtable, American Association of University Women, 1st and 2nd Church, Boston, MA, January 31, 1992.

“MIT’s Initiative in K–12 Education,” Center for Talented Youth, Cambridge, MA, October 19, 1991.

“Corrosion of Advanced Metal Systems,” ADVMAT, San Diego, CA, June 19, 1991.

“The Corrosion Engineering of Advanced Materials,” Europe-USA Symposium on New Frontiers in Science and Engineering in a European Perspective, Paris, France, May 28, 1991.

“Reversing the Trend to Technical Illiteracy in the USA,” MIT Alumni Club of the Capital District of New York, NY, May 16, 1991.

“Improving Science Literacy—An MIT Model,” Massachusetts Association of Science Supervisors Annual Meeting, Worcester, MA, May 2, 1991.

“Science Literacy: A Major Problem—and Opportunity,” MIT Alumni Club of Western Pennsylvania, April 24, 1991.

“The MIT Science and Engineering Program for Science Teachers,” Pittsburgh Conference, Chicago, IL, March 5, 1991.

“MIT Electronics Packaging Program,” Intel, Santa Clara, CA, January 30, 1991.

“Science Literacy: A Major Problem—and Opportunity,” MIT Alumni Club of Northern California, January 30, 1991.

“Science Literacy: A Major Problem—and Opportunity,” MIT Alumni Club of San Diego, CA, January 29, 1991.

“MIT Electronics Packaging Program,” Rockwell Science Center, Thousand Oaks, CA, January 28, 1991.

“Science Literacy: A Major Problem—and Opportunity,” MIT Alumni Club of Southern California, Los Angeles, CA, January 28, 1991.

“The MIT Science and Engineering Program for High School Teachers,” MIT Club of Washington, December 5, 1990.

“Materials for Electronic Device Packaging,” Materials Research Society Meeting, Boston, MA, November 27, 1990.

“An Agenda for the Materials Processing Center in the 1990s,” MPC 10th Anniversary Symposium, Cambridge, MA, November 18, 1990

“Science Literacy: A Major Problem—and Opportunity,” North Shore Science Supervisors Association; Saugus, MA, November 1, 1990

“The MIT Science and Engineering Program of High School Teachers,” MIT Alumni Club of Puget Sound, Seattle, WA, October 16, 1990

“Corrosion Failure of the Polyimide-Metal Interface,” Electrochemical Society Fall Meeting, Seattle, WA, October 15, 1990

“Corrosion of Electronic Materials and Devices,” Boston Section of NACE; Newport, RI, October 4, 1990

“Education in America—A Need for Stewardship,” Keynote Address, MIT Alumni Leadership Conference, Cambridge, MA, September 15, 1990

“Corrosion Engineering of New Materials and New Engineering Systems,” Gordon Conference, New London, NH, July 24, 1990

“A Processing Agenda for The 1990s,” 11th Biennial Conference on National Materials Policy, Williamsburg, VA, June 12, 1990.

“An Experiment in Freshman Chemistry at MIT,” American Chemical Society, Boston, MA, April 27, 1990.

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“Overview of Corrosion in Integrated Circuit Packages,” Corrosion ‘90, Las Vegas, NV, April 25, 1990.

“The Effect of Thickness on the Electrical Conductivity of Kapton Polyimide,” 11th Intl. Corrosion Congress, Florence, Italy, April 2, 1990 (with F. Bellucci).

“Materials Processing Research at MIT,” Joint Symposium of Welding Research Institute/Materials Processing Center, Osaka University, January 11, 1990.

“Corrosion Engineering of Metal Matrix Composites,” University of Naples, Naples, Italy, June 9, 1989.

“Electrochemistry of Metastable Alloys,” University of Naples, June 8, 1989.

“Advanced Organic Coatings for Packaging of Electronic, Magnetic and Optical Devices,” IBM, Essex Junction, VT, March 23, 1989.

“Corrosion Engineering in the Packaging of Electronic Magnetic and Optical Devices,” International Symposium on Corrosion Science and Engineering (in honor of Marcel Pourbaix’s 85th Birthday), Brussels, Belgium, March 14, 1989.

“The Corrosion Engineering of Metal-Matrix Composites,” Lockheed Palo Alto Research Center Seminar, February 10, 1989.

“The Use of Electrochemical Methods to Study Corrosion of Advanced Materials and Engineering Systems,” Golden Gate Materials Technology Conference, Santa Clara, CA, February 9, 1989.

“Corrosion Engineering of Metal-Matrix Composites,” ONR Workshop on Environmental Effects in Metal, Ceramic and Organic Composites, NIST, Gaithersburg, MD, November 18, 1988.

“Processing and Process Sensors,” Diamond Jubilee of Metallurgy at NBS (NIST), Gaithersburg, MD, November 10, 1988.

“A Materials Centennial at MIT,” MIT Club of New Haven, CT, November 9, 1988.

“The Electrochemistry of Advanced Engineering Materials,” Gordon Conference and Physical Electrochemistry, Colby-Sawyer College, New London, NH, August 11, 1988.

“Materials Processing,” Seminar for Astronaut Candidates, Johnson Space Flight Center, Houston, TX, April 5, 1988.

“Electrochemical Properties of Metal-Matrix Composites,” Materials Science Colloquium, Battelle Pacific Northwest Laboratories, Richland, WA, January 12, 1988.

“The Chemical Stability of Advanced Materials,” The University of Poona, India, November 12, 1987.

“Corrosion Education and Corrosion Research,” Plenary Lecture, 10th International Congress on Metallic Corrosion, Madras, India, November 8, 1987.

“Developments in Advanced Materials in the Industrialized Nations,” University of Virginia Materials Science Colloquium, October 25, 1987.

“The Corrosion Resistance of Metastable Alloys,” Greater Boston Section of NACE, Chestnut Hill, MA, September 10, 1987.

“Developments in Advanced Materials in the Industrialized Nations,” 9th Biennial Conference on National Materials Policy, FMS, Fredericksburg, VA, August 4, 1987.

“Recent Research in the Materials Processing Center at MIT,” Japan R & D Center for Metals, Tokyo, Japan, April 24, 1987.

“Recent Research Activities in the Materials Processing Center at MIT,” Inauguration of the Furukawa Electric Company’s Materials Research Center, Yokohama, Japan, April 23, 1987.

“Current Research in The Uhlig Laboratory,” Nippon Steel Company Research Center, Kawasaki, Japan, April 22, 1987.

“Current Research in the Materials Processing Center at MIT,” Hitachi Central Research Laboratory, Hitachi City, Japan, April 21, 1987.

“Chemical Stability of Advanced Materials,” Chemistry Department Colloquium, Texas A & M University, March 24, 1987.

“Corrosion Research: Past, Present and Future,” Shell Westhollow Laboratories, Houston, TX, March 23, 1987.

“Current Projected Impact of Corrosion Technology,” Thirty-Third Sagamore Army Materials Research Conference, Burlington, VT, July 28, 1986.

“High Technology Materials,” Special Libraries Association, Annual Meeting, Boston, June 10, 1986.

“The Chemical Properties of Metastable Crystalline and Glassy Alloys,” Spring Meeting of the Electrochemical Society, Boston, May 7, 1986.

“The Need for Leadership in the Materials Industries,” David Ford McFarland Award Lecture, The Pennsylvania State University, April 26, 1986.

“Overview of the Materials Processing Center at MIT,” Battelle Pacific Northwest Laboratories, Richland, WA, January 30, 1986.

“Chemistry of Fracture,” 2nd Intl. Conf. on Fundamentals of Fracture, Gatlinburg, TN, November 6, 1985.

“Hydrogen Transport in Metals,” Materials Science Seminar, Brown University, October 24, 1985.

“Prospects for the Establishment of a Massachusetts Advanced Materials Center,” New England Chapter of American Ceramics Society, Boston, October 9, 1985.

“Corrosion Resistance of Metastable Alloys Processed by Rapid Solidification, EPRI Workshop on Amorphous Metals and Semiconductors, San Diego, May 17, 1985.

“Do We Need a National Materials Policy?” Graduate Materials Committee, MIT, April 1, 1985.

“Corrosion Resistance of Alloys Processed by Rapid Solidification Technology,” NACE, 1985 Annual Meeting, Boston, March 27, 1985.

“Materials Processing Research at M.I.T.,” Nippon Steel Corporation Fundamental Laboratories, Kawasaki, Japan, March 15, 1985.

“Corrosion Resistance of Rapidly Quenched Alloys,” USA-Japan Corrosion Seminar on Critical Issues in Reducing the Corrosion of Steel, Nikko, Japan, March 12, 1985.

“Hydrogen Embrittlement of Iron and Nickel Alloys,” Tokyo Institute of Technology, Japan, March 8, 1985.

“The Need for a National Materials Policy,” The Philosophical Society of Washington, 1880th Meeting, Washington, DC, February 22, 1985.

“The Corrosion Resistance of Metastable Alloys,” The Carl Gunnard Johnson Memorial Colloquium in Materials Science, Worcester Polytechnic Institute, November 13, 1984.

“The Physical Metallurgy of Nickel-Base Alloys as It Relates to Corrosion,” International Conference on Corrosion of Nickel-Base Alloys, Cincinnati, October 23, 1984.

“The Atomistics of Fracture,” Los Alamos National Laboratory, Center for Materials Science Colloquium, October 17, 1984.

“Corrosion Resistance of Stainless Steels Processed by Rapid Solidification Technology,” Intl. Conf. on New Developments in Stainless Steel Technology, ASM Fall Meeting, Detroit, September 17, 1984.

“Corrosion Resistance of Rapidly Solidified Alloys,” Materials Processing Seminar, MIT, September 14, 1984.

“The Effect of Phosphorus on the Corrosion of Rapidly Quenched Alloys,” Fifth International Conference on Rapidly Quenched Metals, Wurzburg, F.R.G., September 5, 1984

“Krumb Lecture,” Chicago Section TMS, June 19, 1984.

“Hydrogen Transport During Plastic Deformation,” 9th Intl. Cong. on Metallic Corrosion, Toronto, Canada, June 5, 1984 (with M. Hashimoto).

“Krumb Lecture,” Intermountain Section, SME, Climax, CO, May 17, 1984.

“Does the U.S. Need a Materials Policy,” Sandia Colloquium, Albuquerque, NM, May 16, 1984.

“Krumb Lecture,” Pinal Mountain Section, SME, Miami, AZ, May 15, 1984.

“Environmentally-Induced Embrittlement,” Am. Phys. Soc. Meeting, Detroit, MI, March 29, 1984.

“Krumb Lecture,” Trinity Section, SME, Dallas, TX, March 15, 1984.

“Krumb Lecture,” Detroit Section, TMS, March 5, 1984.

“Hydrogen Transport Through Nickel During Deformation,” TMS-AIME Meeting, Los Angeles, CA, March 1, 1984 (with G.S. Frankel).

“Corrosion and Oxidation of Powder Metallurgical Alloys,” TMS-AIME Annual Meeting, Los Angeles, CA, February 28, 1984 (with P. Searson).

“Krumb Lecture,” El Paso Section, SME, February 8, 1984.

“Prospects for the Development of a National Materials Policy in the 98th Congress,” Coeur d’Alene Section, SME, Kellogg, ID (Krumb Lecture), January 18, 1984.

“Hydrogen Transport Processes in Iron and Nickel,” Battelle Pacific Northwest Lab., Richland, WA, January 17, 1984.

“The Effect of Phosphorus on the Corrosion Resistance of Amorphous Copper-Zirconium Alloys,” Materials Research Society Annual Meeting, Boston, MA, November 16, 1983 (by T.D. Burleigh).

“Corrosion: The Environmental Degradation of Materials,” Ottawa Valley Chapter of ASM, November 8, 1983.

“Congressional Action to Develop a National Materials Policy,” Metallurgical Engineering Colloquia, The Ohio State University, Columbus, OH, October 14, 1983.

“Effects of Grain Boundary Segregation and Precipitation on the Hydrogen Susceptibility of Nickel,” TMS-AIME Fall Meeting, Philadelphia, PA, October 5, 1983 (with F.T.S. Lee).

“Electrochemical Studies of Hydrogen Transport in Metal Electrodes,” Conference on Crack Tip Structure and Processes, NBS, Gaithersburg, MD, June 7, 1983.

“The Effect of Phosphorus on the Corrosion Resistance of Amorphous Copper–Zirconium Alloys,” 5th Intl. Cong. on Passivity, France, (by T.D. Burleigh), June 1, 1983.

“Scientists’ Role in the Evolution of Public Policy,” Awards Banquet, National Capital Section of the Electrochemical Society, Washington, DC, May 5, 1983.

“Prospects for the Development of a National Materials Policy in the 98th Congress,” Center for Materials Science & Engineering Colloquium, MIT, April 7, 1983.

“Prospects for the Development of a National Materials Policy in the 98th Congress,” Martin Marietta Laboratories, Baltimore, MD, April 5, 1983.

“Hydrogen Permeation and Embrittlement of Metals,” U.S. Bureau of Mines, Avondale, MD, March 8, 1983.

“Prospects for the Development of a National Materials Policy in the 98th Congress,” Battelle Pacific Northwest Laboratories, Richland, WA, January 26, 1983.

“Corrosion of Rapidly Solidified Glassy and Crystalline Alloys in Aqueous Media,” MIT/ILP Symposium, December 2, 1982.

“Corrosion of Aluminum in Seawater,” MIT/Marine Industry Colloquium, December 1, 1982.

“Corrosion Resistance of Rapidly Quenched Alloys,” Materials Science Seminar, Johns Hopkins University, November 10, 1982.

“Corrosion Resistance of Rapidly Quenched Alloys,” AIME Fall Meeting, St. Louis, MO, October 28, 1982.

“Grain Boundary Chemistry and Environmental Interactions in Ni-Base Alloys,” AIME Fall Meeting, St. Louis, MO, October 26, 1982.

“The Corrosion Resistance of Rapidly Quenched Alloys,” Corrosion Center, University of Minnesota, September 17, 1982.

“An Experimental Investigation of Anodic Oxide Film Growth on Amorphous Alloys,” Electrochemical Society Meeting, Montreal (by N.R. Sorensen), May 11, 1982.

“Failures from Corrosion,” ASM Metals Engineering Institute Course on Principles of Failure Analysis, Boston, MA, March 11, 1982.

“Recent Advances in Understanding Embrittlement Phenomena,” Boston Chapter ASM Student’s Night Symposium, January 14, 1982.

“Problems in Corrosion of Metals,” Physico-Mechanical Institute of the Ukrainian Academy of Sciences, L’vov, November 12, 1981.

“Atomistics of Environmentally-Induced Fracture,” Institute of Physical Chemistry of the Academy of Sciences of the USSR, Moscow, November 10, 1981.

“Corrosion Resistance of Microcrystalline Alloys,” Fourth International Conference on Rapidly Quenched Metals, Sendai, Japan, August 25, 1981.

“Corrosion Resistance of Rapidly Quenched Alloys,” Beijing University of Iron and Steel Technology, Beijing, People’s Republic of China, August 21, 1981.

“Hydrogen Embrittlement,” Beijing University of Iron and Steel Technology, Beijing, People’s Republic of China, August 20, 1981.

“Atomistics of Fracture,” South China Institute of Technology, Canton, People’s Republic of China, August 18, 1981.

“Corrosion Resistance of Rapidly Quenched Alloys,” Symposium of the Provincial Chemical Engineering Society, Canton, People’s Republic of China, August 17, 1981.

“Corrosion Resistance of Rapidly quenched Alloys,” South China Institute of Technology, Canton, People’s Republic of China, August 17, 1981.

“Hydrogen Embrittlement,” South China Institute of Technology, Canton, People’s Republic of China, August 15, 1981.

“Corrosion Engineering Short Course,” Instituto Nacional de Tecnologia Industrial (INTI), Buenos Aires, Argentina, June 15–19, 1981.

“General Overview: Atomistics of Environmentally-Induced Fracture,” NATO Advanced Research Institute on Atomistics of Fracture, Calcatoggio, Corsica, May 23, 1981.

“Corrosion Resistance of Rapidly Quenched Alloys,” Joint Meeting of Boston Chapters of AIME and ECS, March 2, 1981.

“Corrosion Engineering Short Course,” Kuwait Institute for Scientific Research, January 10–14, 1981.

“Metallic Corrosion,” in What’s New in Engineering, General Motors Institute, Flint, MI, September 19, 1980.

“The Role of Grain Boundary Chemistry and the Environment on Intergranular Fracture,” Third International Conference on Effects of Hydrogen on Behavior of Materials, Jackson, WY, August 27, 1980.

“Hydrogen Permeation and Embrittlement Studies on Metallic Glasses,” Alexander R. Troiano Honorary Symposium, Case Western Reserve University, Cleveland, OH, June 3, 1980.

“Corrosion Research on Metallic Glasses,” Pacific Northwest Metals and Minerals Conference, Seattle, WA, May 9, 1980.

“Surface Analysis of Electrochemically Pretreated Metals,” University of Minnesota UNITE Seminar April 15, 1980.

“Atomistics of Environmentally-Induced Fracture,” NACE Corrosion/80 Research Conference, Chicago, IL March 3, 1980.

“Corrosion Resistance of Metallic Glasses,” Materials Research Society, Boston, MA, November 29, 1979.

“Metallic Corrosion,” in What’s New in Engineering, General Motors Institute, Flint, MI, November 2, 1979.

“Hydrogen Entry and Permeation in Metallic Glasses,” Electrochemical Society Meeting, Los Angeles, CA, October 15, 1979.

“Hydrogen Entry and Permeation in Nickel-Base Alloys,” Sandia Laboratories, Livermore, CA, October 12, 1979.

“Lectures on Corrosion,” UCLA Short Course on Corrosion Engineering, Los Angeles, CA, October 10–11, 1979.

“Chemical Stability of Metallic Glasses,” Allied Chemical Corporate Development Center, Morristown, NJ, September 27, 1979.

“New Techniques in Corrosion Prevention,” Advanced Manufacturing Engineering Council Seminar, Raytheon Corporate Offices, Lexington, MA, September 26, 1979.

“The Corrosion Resistance of Metallic Glasses,” Third International Conference on Mechanical Behavior of Materials, Cambridge University, UK, August 22, 1979.

“Grain Boundary Impurity-Environment Interactions,” Battelle Workshop on the Role of Grain Boundary Chemistry and the Environment in Intergranular Fracture, Seattle, WA, August 6, 1979.

“Corrosion Research at MIT,” Martin Marietta Seminar, Baltimore, MD, July 12, 1979.

“Advances in Surface Analytical Methods,” University of Connecticut Institute of Materials Science Symposium, Storrs, CT, May 4, 1979.

“Environmental Fracture of Ni-Base Alloys,” Symposium on SCC and Environmental Fracture of Structural Materials,” Schenectady, NY, April 26, 1979.

“Lectures on Corrosion,” UCLA Short Course on Corrosion Engineering, University of Maryland, College Park, MD, March 28–29, 1979.

“Hydrogen Permeation and Embrittlement of Metallic Glasses,” NACE Corrosion ‘79 Research Conference, Atlanta, GA, March 12, 1979.

“An Introduction to the Surface Analytical Facility at MIT,” Center for Materials Science and Engineering Colloquium, Massachusetts Institute of Technology, December 1, 1978.

“Hydrogen Embrittlement/Stress Corrosion Cracking: A Comparison,” Boston Chapter of NACE, November 8, 1978.

“The Embrittlement of Aluminum Alloys by Cathodic Hydrogen,” Fall Meeting of AIME, St. Louis, MO, October 18, 1978.

“Hydrogen Permeation and Embrittlement Studies on Metallic Glasses,” Fall Meeting of AIME, St. Louis, MO, October 18, 1978.

“Contemporary Issues in Environmentally-Induced Fracture,” Materials Science and Engineering Colloquium Series, Massachusetts Institute of Technology, Cambridge, MA, September 26, 1978.

“Contemporary Corrosion Research,” keynote address at the American Vacuum Society Symposium on Macroscopic and Microscopic Aspects of Corrosion, Mt. Hood, OR, August 19, 1978.

“Stress Corrosion Cracking and Hydrogen Embrittlement: Differences and Similarities,” Battelle Pacific Northwest Laboratories, Richland, WA, July 26, 1978

“Corrosion Resistance of Metallic Glasses,” Gordon Conference on Corrosion, Colby-Sawyer College, New London, NH, July 14, 1978.

“Surface Effects in Crystal Plasticity,” International Conference on Tribology, Massachusetts Institute of Technology, Cambridge, MA, June 21, 1978.

“Environmental Degradation of Materials,” IBM, Poughkeepsie Technical Center, May 9, 1978.

“Environmental Degradation of Materials,” Alpha Sigma Mu Lecture, Rennselaer Polytechnic Institute, Troy, NY, April 12, 1978.

“Corrosion Control,” Union Carbide, Tarrytown Technical Center, April 4, 1978.

“Differences Between Stress Corrosion Cracking and Hydrogen Embrittlement,” Industrial Liaison Symposium on Corrosion, Massachusetts Institute of Technology, Cambridge, MA, January 19, 1978.

“Environmental Degradation of Materials,” Industrial Liaison Symposium on Corrosion, Massachusetts Institute of Technology, Cambridge, MA, January 19, 1978.

“Stress Corrosion Cracking and Hydrogen Embrittlement: Differences and Similarities,” Symposium on Environment Sensitive Fracture of Engineering Materials, Fall Meeting of AIME, Chicago, IL, October 24, 1977.

“Modification of the Strength of Solids by Chemisorption,” International Summer Institute on Surface Science, University of Wisconsin at Milwaukee, August 23, 1977.

“Interface Dependent Mechanical Behavior,” Gordon Conference on Chemistry at Interfaces, Kimball Union Academy, Meriden, NH, July 20, 1977.

“Crack Tip Chemistry,” Battelle Pacific Northwest Laboratories, Richland, WA, June 23, 1977.

“Surface Effects in Crystal Plasticity,” Battelle Pacific Northwest Laboratories, Richland, WA, June 20, 1977.

“Corrosion and Passivation of Metals,” T.R. Evan Research Center, Diamond Shamrock Corporation, Gainesville, OH, May 3, 1977.

“Corrosion: Environmental Degradation of Materials,” 9th Annual Frontiers in Chemistry Lecture Series, State University of New York at New Paltz, April 28, 1977.

“Hydrogen Embrittlement of Nickel and Its Alloys,” Stanford Research Institute, March 17, 1977.

“Surface Effects in Crystal Plasticity,” 106th AIME Annual Meeting, Atlanta, GA, March 8, 1977.

“Environmental Degradation of Materials,” Chemistry Department Colloquium, Northeastern University, Boston, MA, February 7, 1977.

“Environmental Degradation of Materials,” Materials Colloquium, Department of Materials Science and Engineering, Massachusetts Institute of Technology, Cambridge, MA, December 14, 1976.

“Applications of Surface Chemistry to Industrial Problems,” 3M Research Center, St. Paul, MN, October 29, 1976

“The Influence of Surface Charge Density on the Plasticity and Fracture of Zinc Monocrystal Electrodes,” ICSMA4, Nancy, France, August 31, 1976.

“Corrosion and Corrosion Control of Steels,” Fourth Transmission Seminar, Meyer Industries, Minneapolis, MN, August 20, 1976.

“Surface Analytical Approaches to Environmentally-Induced Embrittlement,” Battelle Northwest Laboratories, August 13, 1976.

“The Intergranular Embrittlement of Nickel by Hydrogen: Relation to the Cracking of PWR Steam Generator Tubes,” Battelle Northwest Laboratories, Richland, WA, August 12, 1976.

“The Principles and Applications of Surface Effects in Crystal Plasticity,” Metallurgy Division Seminar Series, National Bureau of Standards, Gaithersburg, MD, May 24, 1976.

“Hydrogen Embrittlement: A Surface Analytical Approach,” Materials Science Seminar Series, Department of Materials Science and Engineering, Massachusetts Institute of Technology, April 6, 1976.

“The Use of Electrochemical and Surface Analytical Techniques in the Study of Embrittlement Phenomena,” Shell Westhollow Research Center, Houston, TX, March 26, 1976.

“The Principles and Applications of Surface Effects in Crystal Plasticity,” McMaster University Institute for Materials Research Seminar, Hamilton, Ontario, March 8, 1976.

“The Effect of Electrolytically Enhanced Fracture or Slip on Grinding Ceramics,” Ceramics Seminar Series, Department of Materials Science and Engineering, Massachusetts Institute of Technology, March 4, 1976.

“Electrocapillary Effects in the Plasticity and Fracture of Zinc Monocrystals,” 1976 Annual Meeting AIME, Las Vegas, NV, February 24, 1976.

“The Use of Electrochemical and Surface Analytical Techniques in the Study of Embrittlement Phenomena,” New England Combined Chapter, American Vacuum Society, Boston, MA, February 11, 1976.

“Surface Effects in Crystal Plasticity,” Maryland Institute of Metals, Baltimore, MD, December 9, 1975.

“The Intergranular Embrittlement of Nickel by Hydrogen,” Institute of Physical Chemistry, Academy of Sciences of the USSR, Moscow, November 14, 1975.

“Surface Effects in Crystal Plasticity: General Overview,” NATO Advanced Study Institute on Surface Effects in Crystal Plasticity, Hohegeiss, F.R.G., September 6, 1975.

“Surface Effects in Crystal Plasticity,” Institut für Grenzflächenforschung und Vakuumphysik, Kernforschungsanlage, Jülich, F.R.G., June 12, 1975

“The Intergranular Embrittlement of Nickel by Hydrogen: The Role of Impurities,” Max-Planck-Institut für Metallforschung, Stuttgart, F.R.G., June 6, 1975.

“The Intergranular Embrittlement of Nickel by Hydrogen: The Role of Impurities,” Studsvik - AB Atomenergi Sweden, Nyköping, Sweden, May 22, 1975.

“Surface Effects in Crystal Plasticity,” Fritz-Haber-Institut der Max-Planck-Gesellschaft, Berlin, F.R.G., May 5, 1975.

“Surface Effects in Crystal Plasticity,” Ecole Nationale Supérieure de Chimie, Paris, France, April 30, 1975.

“The Use of Electrochemical and Surface Analytical Techniques in the Study of Embrittlement Phenomena,” Central Electricity Generating Board, Research Laboratories, Leatherhead, England, March 7, 1975.

“Surface Effects in Crystal Plasticity,” Department of Metallurgy and Materials Science, Cambridge University, England, March 3, 1975.

“Surface Effects in Crystal Plasticity,” Philips Research Laboratories, Eindhoven, The Netherlands, February 20, 1975.

“Surface Effects in Crystal Plasticity,” Physikalisch Chemisches Institut der Universität, München, F.R.G., January 21, 1975.

“The Embrittlement of Nickel by Cathodic Hydrogen,” Joint meeting of the G.V. Akimov State Research Institute for the Protection of Materials and the Institute of Chemical Technology, Prague, Czechoslovakia, January 7, 1975.

“The Use of Electrochemical and Surface Analytical Techniques in the Study of Embrittlement Phenomena,” Joint meeting of the G.V. Akimov State Research Institute for the Protection of Materials and the Institute of Chemical Technology, Prague, Czechoslovakia, January 7, 1975.

“The Use of Electrochemical and Surface Analytical Techniques in the Study of Embrittlement Phenomena,” Polish Academy of Sciences, Warsaw, Poland, January 3, 1975.

“Surface Effects in Crystal Plasticity II: Technological Applications,” Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany, November 13, 1974.

“Surface Effects in Crystal Plasticity I: Scientific Aspects,” Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany, October 30, 1974.

“Surface Phenomena in Metal Cutting and Ceramic Machining—and Earthquakes to Order,” Carolinas Control Chapter, ASM, Raleigh, NC, May 9, 1974.

“Some Applications of Surface Science to Materials Technology,” Esso Corporate Research Center, Linden, NJ, April 16, 1974.

“Materials Science,” Maryland Academy of Science Junior Science and Humanities Seminar, Baltimore, MD, March 22, 1974.

“Electrochemical Techniques in the Study of Embrittlement Phenomena,” National Association of Corrosion Engineers Annual Spring Meeting, Chicago, IL, March 7, 1974

“Some Applications of Surface Science to Materials Technology,” Department of Chemical Engineering and Materials Science, University of Minnesota, February 25, 1974.

“Some Applications of Surface Science to Materials Technology,” Department of Metallurgy and Materials Science, University of Pennsylvania, February 14, 1974.

“Some Applications of Surface Science to Materials Technology,” Department of Metallurgy and Materials Science, Massachusetts Institute of Technology, January 29, 1974.

“Surface Effects in Crystal Plasticity,” Mechanical and Aerospace Engineering Seminar Series, University of Delaware, November 16, 1973.

“Intergranular Embrittlement of Ni by Cathodically Produced Hydrogen,” Conference on Hydrogen in Metals, Seven Springs, PA, September 25, 1973.

“Intergranular Cracking of Pure Nickel Electrodes at Cathodic Potentials,” Third International Conference on the Strength of Metals and Alloys, Cambridge University, England, August 24, 1973.

“Hydrogen Embrittlement of F.C.C. Metals and Alloys,” Max-Planck-Institut fur Eisenforschung, Dusseldorf, Germany, August 15, 1973.

“Surface Effects in Crystal Plasticity,” Max-Planck-Institut fur Metallforschung, Institut fur Physik, Stuttgart, Germany, August 13, 1973.

“Electromechanical Machining of Metals and Alloys,” Engineering Conference, Society of Manufacturing Engineers, Detroit, MI, May 9, 1973.

“The Chemical and Physical Nature of Surfaces,” International Conference on Surface Technology, Carnegie-Mellon University, May 1, 1973.

“Electromechanical Machining,” Army Weapons Command, Research Seminar, Rock Island Arsenal, March 28, 1973.

“Materials Science,” Maryland Academy of Sciences Junior Science and Humanities Symposium, Baltimore, MD, March 23, 1973.

“Intergranular Cracking of Pure Nickel at Cathodic Potentials,” N.A.C.E., Corrosion Research Conference, Anaheim, CA, March 21, 1973

“The Mechanical Properties of Metal Electrodes,” Washington Chapter of the Electrochemical Society, Washington, DC, March 1, 1973.

“The Science and Technology of Environmental Effects on the Mechanical Behavior of Solids,” State University of New York at Stony Brook, December 13, 1972.

“Environment-Sensitive Mechanical Behavior of Metals and Alloys,” Fundamental Research Laboratories, Nippon Steel Company, Kawasaki, Japan, June 2, 1972.

“Surface Effects in Crystal Plasticity,” Kyushu University, Fukuoka, Japan, May 31, 1972.

“Environment-Sensitive Mechanical Behavior of Metals,” Research Institute for Iron, Steel and Other Metals, Tohoku University, Sendai, Japan, May 30, 1972.

“Stress Corrosion Cracking of Al-Zn-Mg Alloys: The Corrosion Behavior of Grain Boundary Constituents,” 5th International Congress on Metallic Corrosion, Tokyo May 25, 1972 (with Sedriks, Green, and Novak).

“Electrocapillarity and the Microhardness of Zinc Monocrystal Electrodes,” 5th International Congress on Metallic Corrosion, Tokyo, May 23, 1972.

“On the Mechanical Properties of Metal Electrodes,” ASM Seminar, The Pennsylvania State University, April 18, 1972.

“Electrocapillary Effects in the Mechanical Behavior of Metals,” Spring Meeting of the American Chemical Society, Boston, MA, April 12, 1972.

“Electrocapillarity and the Microhardness of Zinc Monocrystal Surfaces,” Corrosion Research Conference, N.A.C.E., St. Louis, MO, March 21, 1972.

“The Influence of Applied Potentials on the Microhardness of Zinc Monocrystal Electrodes: The Electrocapillary Effect,” International Symposium on the Science of Hardness Testing and Its Research Applications, National Metal Congress, Detroit, MI, October 20, 1971.

“Electrocapillarity and Mechanical Behavior,” Paul D. Merica Research Center, International Nickel Company, Suffern, NY, August 20, 1971.

“The Characterization of Metal Surfaces,” International Conference on Corrosion Fatigue, Storrs, CT, June 14, 1971.

“On the Anisotropy Observed During the Passivation of Nickel Monocrystals,” National Association of Corrosion Engineers, Corrosion Research Symposium, Chicago, IL, March 22, 1971.

“The Science of Materials,” Maryland Academy of Sciences, Junior Science and Humanities Seminar, Baltimore, MD, March 19, 1971.

“Surface Effects on the Plastic Deformation of Metal Monocrystals,” Columbia University, November 25, 1970.

“Surface Effects on the Plastic Deformation of Metals: The Electrocapillary Effect,” Massachusetts Institute of Technology, November 12, 1970.

“The Temperature Dependence of Stacking Fault Energy in Fe-Cr-Ni Alloys,” AIME Fall Meeting, Cleveland, OH, October 19, 1970.

“Surface-Sensitive Mechanical Behavior of Nickel Monocrystals,” Second International Conference on Strength of Metals and Alloys, A.S.M., Asilomar, CA, September 1, 1970.

“Surface-and Environment-Sensitive Mechanical Behavior of Metals,” Alpha Sigma Mu Seminar, Rensselaer Polytechnic Institute, April 22, 1970.

“Surface-and Environment-Sensitive Mechanical Behavior of Metals,” Materials Engineering Seminar, University of Pittsburgh, January 20, 1970.

“Studies of Extrinsic-Intrinsic Fault Pairs in Austenitic Stainless Steel,” AIME Spring Meeting, Pittsburgh, PA, May 16, 1969.

“Elements of Metallurgy,” Metals Engineering Institute (ASM) Metallurgical Course, Washington Chapter of ASM, National Bureau of Standards February–June 1969.

“Plastic Deformation of Electrochemically Polarized Nickel Single Crystals,” Materials Science Seminar, Research Institute for Advanced Studies (RIAS), June 12, 1968.

“Plastic Deformation of Electrochemically Polarized Nickel Single Crystals,” at Institute for Materials Research Seminar, National Bureau of Standards, May 9, 1968.

“Theoretical Work on Stress-Corrosion,” at Joint Session of IMD (AIME), N.A.C.E. and Electrochemical Society, Carnegie-Mellon University April 25, 1968.

“Stress-Corrosion Cracking of Fe-Cr-Ni Alloys,” At International Meeting on Fundamental Aspects of Stress-Corrosion Cracking, The Ohio State University September 12, 1967.

“On a Mechanism for Stress-Corrosion Cracking in Austenitic Stainless Steel,” Lehigh University April 13, 1967.

## Professional Affiliations

- American Institute of Mining, Metallurgical and Petroleum Engineers
  - Member, TMS-Committee on Chemistry and Physics of Metals (1972–1983)
  - Member, Executive Committee Boston Section of AIME (1976–1980)
  - Member, TMS Committee on Corrosion Resistant Metals (1976–)
  - Member, Continuing Education Committee (1980–1986)
  - Member, TMS Acta Metallurgica Gold Medal and Hume-Rothery Award Subcommittee (1983–)
  - Member, Long Range Planning Committee, (1987–)
- American Society for Metals
  - Member, Oxidation and Corrosion Activity (1976–)
  - Member, Government and Public Affairs Committee (1984–)
  - Awards Chairman, Boston Chapter of ASM (1984–1986)
  - 1985 National Nominating Committee, ASM
  - World Materials Congress 1988, Organizing Committee
- National Association of Corrosion Engineers
  - Member, Governmental Affairs Committee, (1983–1986)
  - Member, Research Committee (1974–1983)
  - Co-Editor, “Corrosion Research in Progress” Column, CORROSION Journal (1973–1976)
  - Chairman, Awards Committee (1990–1991)
  - Director, Ex Officio (1990–1991)
  - Electric Power Research Institute
  - Member, Corrosion Advisory Committee (1978–1981)
- American Society for Testing and Materials
  - Member, Committee G-2 on Erosion and Wear (1972–1983)

- The Electrochemical Society
  - Active Member
- Institute of Electrical and Electronics Engineers
  - Member, Committee on U.S. Competitiveness (1987–)
- US/USSR Agreement for Cooperation in Science and Technology: Corrosion Working Group
  - Project Coordinator, Mechanical-Chemical and Localized Corrosion Processes (1978–1981).